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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/838,892 | 04/20/2001 | Jack Oon Chu | YO920010308US1 | 1665 |

7590 12/12/2002

IBM CORPORATION
INTELLECTUAL PROPERTY LAW DEPT.
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EXAMINER

MULPURI, SAVITRI

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| ART UNIT | PAPER NUMBER |
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2812

DATE MAILED: 12/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/838,892

Applicant(s)
Chu et al

Examiner
Savitri Mulpuri

Art Unit
2812



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Oct 24, 2002
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above, claim(s) 29-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 5 6) ☐ Other:

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DETAILED ACTION

This action is in response to the applicant election filed on 10/24/02 electing method claims 1-28.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-3, 5-7,9-10, 14-16, 18-20, 22-25 are rejected under 35 U.S.C. 102(a) as being anticipated by Kanazawa et al.

Kanazawa et al teaches growing SiGeC layer in UHV-CVD at chamber pressure 1.3×10^{-10} torr at a temperature 490 C with ethylene or acetylene compounds as double carbon atoms(see page 1, sec. 0007. Kanazawa teaches partial pressures of gases of silicon, germanium and carbon containing gases (see page 2, sections 0027-0031). Kanazawa teaches SiC layer (see page 1, section 0012.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 8, 12-13, 17,21,27,28 rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa et al in combination with Huang et al.

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Kanazawa et al do not teach in-situ doped SiGeC layers. Huang et al teaches growing silicon carbide with low oxygen concentration by CVD. Therefore, oxygen concentration in the SiC or SiGeC would have been well within the scope of one of ordinary skill in the art through optimization because oxygen in silicon carbide is detrimental to bonding or adhesion to the adjacent materials especially metal such as copper, as suggested by Huang et al. (See abstract and page 1, paragraphs 0010-0011).

Claims 11, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa et al in combination with Takahashi et al..

Kanazawa et al do not teach in-situ doped SiC or SiGeC. Takahashi teaches doped SiC or doped SiGeC layers by additionally supplying the dopant gas along with source gases(see all embodiments). It would have been obvious to one of ordinary skill in the art to in-situ doped SiC or SiGeC layers to obtain sharp rising dopant concentration profile.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Todd et al and Candelaria and Kubo et al et al teaches growing SiC or SiGeC with UHV-CVD technique.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Mulpuri whose telephone number is 703-305-5184. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


SAVITRI MULPURI
PRIMARY EXAMINER